Plant Molecular Biology

Contents of Volume 15, 1990

Vol. 15 No. 1 July 1990

C.A. Loopstra, A.-M. Stomp and R.R. Sederoff: Agrobacterium-mediated DNA transfer in sugar pine 1

F.D. Guerrero, J.T. Jones and J.E. Mullet: Turgor-responsive gene transcription and RNA levels increase rapidly when pea shoots are wilted. Sequence and expression of three inducible genes 11

J.D. Hamill, R.J. Robins, A.J. Parr, D.M. Evans J.M. Furze and M.J.C. Rhodes: Over-expressing a yeast ornithine decarboxylase gene in transgenic roots of *Nicotiana rustica* can lead to enhanced nicotine accumulation 27

M. Cannon, J. Platz, M. O'Leary, C. Sookdeo and F. Cannon: Organ-specific modulation of gene expression in transgenic plants using antisene RNA 39

J. Silverthorne, C.F. Wimpee, T. Yamada, S.A. Rolfe and E.M. Tobin: Differential expression of individual genes encoding the small subunit of ribulose-1,5-bisphosphate carboxylase in *Lemna gibba* 49

N. Ishibashi, D. Yamauchi and T. Minamikawa: Stored mRNA in cotyledons of *Vigna unguiculata* seeds: nucleotide sequence of cloned cDNA for a stored mRNA and induction of its synthesis by precocious germination 59

J.M. Skuzeski, L.M. Nichols and R.F. Gesteland: Analysis of leaky viral translation termination codons *in vivo* by transient expression of improved β-glucuronidase vectors 65

F. Quattrocchio, M.A. Tolk, I. Coraggio, J.N.M. Mol, A. Viotti and R.E. Koes: The maize zein gene zE19 contains two distinct promoters which are independently activated in endosperm and anthers of transgenic *Petunia* plants 81

I.M. van der Meer, C.E. Spelt, J.N.M. Mol and A.R. Stuitje: Promoter analysis of the chalcone synthase (*chs*A) gene of *Petunia hybrida*: a 67 bp promoter region directs flower-specific expression 95

D.C. Bennett, S.A. Rogers, L.-J. Chen and E.M. Orozco, Jr.: A primary transcript in spinach chloroplasts that completely lacks a 5′ untranslated leader region 111

V. Walbot and C. Warren: DNA methylation in the *Alcohol dehydrogenase-1* gene of maize 121

F. Guerineau, L. Brooks, J. Meadows, A. Lucy, C. Robinson and P. Mullineaux: Sulfonamide resistance gene for plant transformation 127

S. Kurkela and M. Franck: Cloning and characterization of a cold- and ABA-inducible *Arabidopsis* gene 137

Y.J. Marco, F. Ragueh, L. Godiard and D. Froissard: Transcriptional activation of 2 classes of genes during the hypersensitive reaction of tobacco leaves infiltrated with an incompatible isolate of the phytopathogenic bacterium *Pseudomonas solanacearum* 145

Update section

S. Harbinder and M. Lakshmikumaran: A repetitive sequence from *Diplotaxis erucoides* is highly homologous to that of *Brassica campestris* and *B. oleracea* 155

E. Schwartz and E. Pichersky: Sequence of two tomato nuclear genes encoding chlorophyll *a*/*b*-binding proteins of CP24, a PSII antenna component 157

P. Strøman, S. Baima and G. Casadoro: A cDNA sequence coding for glutamine synthetase in *Ordeum vulgare* L. 161

D.J. McGarvey, Hong Yu and R.E. Christoffersen: Nucleotide sequence of a ripening-related cDNA from avocado fruit 165

R. D'Ovidio, O.A. Tanzarella and E. Porceddu: Rapid and efficient detection of genetic polymorphism in wheat through amplification by polymerase chain reaction 169

Y. Gafni: Nopaline synthase gene is expressed in *Escherichia coli* and in cucumber cells under a hybrid promoter 173
R. Perrey, U. Warskulat and M. Wink: Molecular cloning of a lupin-specific gene from a cDNA library of suspension-cultured cells of *Lupinus polyphyllus* 175
A.F. MacRae, G.H. Lea.n, Jr., M. Karjala and M.T. Clegg: Presence of an *Activator (Ac)*-like sequence in *Pennisetum glaucum* (pearl millet) 177
R. Cooke: The figwort mosaic virus gene VI promoter region contains a sequence highly homologous to the octopine synthase (ocs) enhancer element 181
E.A. Grabau, C.M. Asleson and B.G. Gengenbach: Nucleotide sequence and transcription of the soybean mitochondrial ATPase subunit 9 gene 183
I.M. Prosser and C.M. Lazarus: Nucleotide sequence of a spinach nitrate reductase cDNA 187
P. Barbier and A. Ishihama: Variation in the nucleotide sequence of a prolamin gene family in wild rice 191
F.L. Sebastiani, L.B. Farrell, M.A. Schuler and R.N. Beachy: Complete sequence of a cDNA of α subunit of soybean β-conglycinin 197
M. Trick: Genomic sequence of a *Brassica S* locus-related gene 203

Vol. 15 No. 2 August 1990

M.A. Dietrich, J.P. Prenger and T.J. Guilfoyle: Analysis of the genes encoding the largest subunit of RNA polymerase II in *Arabidopsis* and soybean 207
C. Kares, E. Prinsen, H. van Onckelen and L. Otten: IAA synthesis and root induction with *iaa* genes under heat shock promoter control 225
R. Villemur: The DNA sequence and structural organization of the GC2 plasmid from the red alga *Gracilaria chilensis* 237
E. Zyprian and C.I. Kado: *Agrobacterium*-mediated plant transformation by novel mini-T vectors in conjunction with a high-copy *vir* region helper plasmid 245
D. McElroy, M. Rothenberg, K.S. Reece and R. Wu: Characterization of the rice (*Oryza sativa*) actin gene family 257
P. Serror, F. Heyraud and P. Heizmann: Chloroplast DNA variability in the genus *Helianthus*: restriction analysis and S1 nuclease mapping of DNA–DNA heteroduplexes 269
K. Düring, S. Hippe, F. Kreuzaler and J. Schell: Synthesis and self-assembly of a functional monoclonal antibody in transgenic *Nicotiana tabacum* 281
Z. Végh, É. Vincze, R. Kadirov, G. Tóth and G.B. Kiss: The nucleotide sequence of a nodule-specific gene, Nms-25 of *Medicago sativa:* its primary evolution via exon-shuffling and retrotransposon-mediated DNA rearrangements 295
N.-E. Assali, R. Mache and S. Loiseaux-de Goër: Evidence for a composite phylogenetic origin of the plastid genome of the brown alga *Pylaiella littoralis* (L.) Kjellm. 307
A. Sakamoto, G. Takeba, D. Shibata and K. Tanaka: Phytochrome-mediated activation of the gene for cytosolic glutamine-synthetase (GS_1) during imbibition of photosensitive lettuce seeds 317
R. Hain, B. Bieseler, H. Kindl, G. Schröder and R. Stöcker: Expression of a stilbene synthase gene in *Nicotiana tabacum* results in synthesis of the phytoalexin resveratrol 325
K. Akama and S. Tanifuji: Sequence analysis of three $tRNA^{Phe}$ nuclear genes and a mutated gene, and one gene for $tRNA^{Ala}$ from *Arabidopsis thaliana* 337
D.L. Willey and J.C. Gray: An open reading frame encoding a putative haem-binding polypeptide is cotranscribed with the pea chloroplast gene for apocytochrome *f* 347

Update section

Din-Pow Ma, Yau-Wen Yang, T.Y. King and S.E. Hasnain: The mitochondrial apocytochrome b gene from *Chlamydomonas reinhardtii* 357

K. Szczyglowski and A.B. Legocki: Isolation and nucleotide sequence of cDNA clone encoding nodule-specific (hydroxy)proline-rich protein LENOD2 from yellow lupin 361
U. Karwowska, A. Goździcka-Józefiak, W. Makalowski and J. Augustyniak: Nucleotide sequence of a tRNA pseudogene from wheat mitochondrial DNA 365
E. Hidalgo, A. Leyva and T. Ruiz-Argüeso: Nucleotide sequence of the hydrogenase structural genes from *Rhizobium leguminosarum* 367

Erratum

F. Quattrocchio, M.A. Tolk, I. Coraggio, J.N.M. Mol, A. Viotti and R. E. Koes: The maize zein gene zE19 contains two distinct promoters which are independently activated in endosperm and anthers of transgenic *Petunia* plants 371

Vol. 15 No. 3 September 1990

L. Comai, P. Moran and D. Maslyar: Novel and useful properties of a chimeric plant promoter combining CaMV 35S and MAS elements 373
M. Castroviejo, M.-T. Gatius and S. Litvak: A low molecular weight DNA polymerase from wheat embryos 383
S. de Pater, L.A.M. Hensgens and R.A. Schilperoort: Structure and expression of a light-inducible shoot-specific rice gene 399
Xin-Hua Feng, S. K. Dube, P.J. Bottino and Shain-dow Kung: Restoration of shooty morphology of a nontumorous mutant of *Nicotiana glauca* × *N. langsdorffii* by cytokinin and the isopentenyltransferase gene 407
S.A. Rogers, Liang-Jwu Chen and E.M. Orozco, Jr.: Analysis of chloroplast promoters using bidirectional transcription vectors 421
E. Pichersky: Nomad DNA – a model for movement and duplication of DNA sequences in plant genomes 437
Cheng-Hui Lin and M. Wu: A ferredoxin-type iron-sulfur protein gene, frx B, is expressed in the chloroplasts of tobacco and spinach 449
G.C. Cannon and S. Heinhorst: Partial purification and characterization of a DNA helicase from chloroplasts of *Glycine max* 457
U. Zentgraf, M. Ganal and V. Hemleben: Length heterogeneity of the rRNA precursor in cucumber *(Cucumis sativus)* 465
C. Golz, F. Köhler and O. Schieder: Transfer of hygromycin resistance into *Brassica napus* using total DNA of a transgenic *B. nigra* line 475
J. Grosset, I. Marty, Y. Chartier and Y. Meyer: mRNAs newly synthesized by tobacco mesophyll protoplasts are wound-inducible 485

Update section

H. Kössel, I. Döry, G. Igloi, R. Maier: A leucine-zipper motif in photosystem I 497
D. Rodriguez, R.S. Ginger, A. Baker and D.H. Northcote: Nucleotide sequence analysis of a cDNA clone encoding malate synthase of castor bean (*Ricinus communis*) reveals homology to DAL7, a gene involved in allantoin degradation in *Saccharomyces cerevisiae* 501
V.D. Hipkins, Ching-Hsiu Tsai and S.H. Strauss: Sequence of the gene for the large subunit of ribulose 1,5-bisphosphate carboxylase from a gymnosperm, Douglas fir 505
H. Puchta, T. Herold, K. Verhoeven, A. Roenhorst, K. Ramm, W. Schmidt-Puchta and H.L. Sänger: A new strain of potato spindle tuber viroid (PSTVd-N) exhibits major sequence differences as compared to all other PSTVd strains sequenced so far 509
M. Löbler and A.M. Hirsch: RFLP mapping of the *abp1* locus in maize (*Zea mays* L.) 513

S. Chopra, R. Dolferus and M. Jacobs: Cloning and sequencing of the *Arabidopsis* aldolase gene 517
H.J.M. Linthorst, L.C. van Loon, J. Memelink and J.F. Bol: Characterization of cDNA clones for a virus-inducible, glycine-rich protein from petunia 521
M.H. Walter, J. Grima-Pettenati, C. Grand, A.M. Boudet and C.J. Lamb: Extensive sequence similarity of the bean CAD4 (cinnamyl-alcohol dehydrogenase) to a maize malic enzyme 525

Vol. 15 No. 4 October 1990

M.J. Battraw and T.C. Hall: Histochemical analysis of CaMV 35S promoter-β-glucuronidase gene expression in transgenic rice plants 527
I.A. Graham, L.M. Smith, C.J. Leaver and S.M. Smith: Developmental regulation of expression of the malate synthase gene in transgenic plants 539
P.J. Hanic-Joyce, D.F. Spencer and M.W. Gray: *In vitro* processing of transcripts containing novel tRNA-like sequences ('t-elements') encoded by wheat mitochondrial DNA 551
M. Kraus, M. Götz and W. Löffelhardt: The cyanelle *str* operon from *Cyanophora paradoxa*: sequence analysis and phylogenetic implications 561
K. Valentin and K. Zetsche: Rubisco genes indicate a close phylogenetic relation between the plastids of Chromophyta and Rhodophyta 575
M. Reith and S. Douglas: Localization of β-phycoerythrin to the thylakoid lumen of *Cryptomonas* Φ does not involve a signal peptide 585
M.R. Olive, J.C. Walker, K. Singh, E.S. Dennis and W.J. Peacock: Functional properties of the anaerobic responsive element of the maize *Adh1* gene 593
D. Albani, L.S. Robert, P.A. Donaldson, I. Altosaar, P.G. Arnison and S.F. Fabijanski: Characterization of a pollen-specific gene family from *Brassica napus* which is activated during early microspore development 605
T.W. Conner, V.H. Goekjian, P.R. LaFayette and J.L. Key: Structure and expression of two auxin-inducible genes from *Arabidopsis* 623
L.M. Briggs, V.L. Pecoraro and L. McIntosh: Copper-induced expression, cloning, and regulatory studies of the plastocyanin gene from the cyanobacterium *Synechocystis* sp. PCC 6803 633

Update section

C. Domon, J.-L. Evrard, F. Herdenberger, D.T.N. Pillay and A. Steinmetz: Nucleotide sequence of two anther-specific cDNAs from sunflower (*Helianthus annuus* L.) 643
L. Lehle: Phosphatidyl inositol metabolism and its role in signal transduction in growing plants 647
Y. Tanaka, K. Kuroe, K. Angata and K. Yanagisawa: ORF209 of *Dictyostelium discoideum* mitochondrial DNA has a homologue in chloroplast DNA 659
J.D. Procunier and K.J. Kasha: The rDNA intergenic spacer region nucleotide sequence of *Hordeum bulbosum* L. 661
S.D. Blakeley, W.C. Plaxton and D.T. Dennis: Cloning and characterization of a cDNA for the cytosolic isozyme of plant pyruvate kinase: the relationship between the plant and non-plant enzyme 665

Erratum

H.J.M. Linthorst, L.C. van Loon, J. Memelink and J.F. Bol: Characterization of cDNA clones for a virus-inducible, glycine-rich protein from petunia 671

Vol. 15 No. 5 November 1990

I.M. Saxena, F.C. Lin and R.M. Brown, Jr.: Cloning and sequencing of the cellulose synthase catalytic subunit gene of *Acetobacter xylinum* 673

A.H. Shirsat, P.J. Meakin and J.A. Gatehouse: Sequences 5′ to the conserved 28 bp Leg box element regulate the expression of pea seed storage protein gene *legA* 685
J.A. Godoy, J.M. Pardo and J.A. Pintor-Toro: A tomato cDNA inducible by salt stress and abscisic acid: nucleotide sequence and expression pattern 695
D. Lee, T.H.N. Ellis, L. Turner, R.P. Hellens and W.G. Cleary: A *copia*-like element in *Pisum* demonstrates the uses of dispersed repeated sequences in genetic analysis 707
S.K. Apte and R. Haselkorn: Cloning of salinity stress-induced genes from the salt-tolerant nitrogen-fixing cyanobacterium *Anabaena torulosa* 723
C.A. Makaroff, I.J. Apel and J.D. Palmer: Characterization of radish mitochondrial *atpA*: influence of nuclear background on transcription of *atpA*-associated sequences and relationship with male sterility 735
M.C. Failla, F. Maimone, A. De Paolis, P. Costantino and M. Cardarelli: The non-conserved region of cucumopine-type *Agrobacterium rhizogenes* T-DNA is responsible for hairy root induction 747
G.A. Thompson, R.S. Boston, L.A. Lyznik, T.K. Hodges and B.A. Larkins: Analysis of promoter activity from an α-zein gene 5′ flanking sequence in transient expression assays 755
K.M. Schmid and J.B. Ohlrogge: A root acyl carrier protein-II from spinach is also expressed in leaves and seeds 765

Update section

J.-L. Evrard, J.-H. Weil and M. Kuntz: An ORF potentially encoding a 6.5 kDa hydrophobic protein in chloroplasts is also present in the cyanellar genome of *Cyanophora paradoxa* 779
C. Crétin and P. Puigdomènech: Glycine-rich RNA-binding proteins from *Sorghum vulgare* 783
J. Keeling, P. Maxwell and R.C. Gardner: Nucleotide sequence of the promoter region from kiwifruit actinidin genes 787
S.H. Isin, J.J. Burke and R.D. Allen: Sequence divergence of pea Cu/Zn superoxide dismutase II cDNAs 789
L. Bonen, S. Bird and L. Belanger: Characterization of the wheat mitochondrial *orf25* gene 793

Vol. 15 No. 6 December 1990

G. Payne, E. Ward, T. Gaffney, P.A. Goy, M. Moyer, A. Harper, F. Meins, Jr. and J. Ryals: Evidence for a third structural class of β-1,3-glucanase in tobacco 797
Guang-Ning Ye, H. Daniell and J.C. Sanford: Optimization of delivery of foreign DNA into higher-plant chloroplasts 809
L.B. Farrell and R.N. Beachy: Manipulation of β-glucuronidase for use as a reporter in vacuolar targeting studies 821
K. Severin and F. Schöffl: Heat-inducible hygromycin resistance in transgenic tobacco 827
W. Nirunsuksiri and C. Sengupta-Gopalan: Characterization of a novel nodulin gene in soybean that shares sequence similarity to the gene for nodulin-24 835
S.L.A. Hobbs, P. Kpodar and C.M.O. DeLong: The effect of T-DNA copy number, position and methylation on reporter gene expression in tobacco transformants 851
C. Fenoll, J.J. Schwarz, D.M. Black, M. Schneider and S.H. Howell: The intergenic region of maize streak virus contains a GC-rich element that activates rightward transcription and binds maize nuclear factors 865
K.R. Gayler, S. Kolivas, A.J. Macfarlane, G.G. Lilley, M. Baldi, R.J. Blagrove and E.D. Johnson: Biosynthesis, cDNA and amino acid sequences of a precursor of conglutin δ, a sulphur-rich protein from *Lupinus angustifolius* 879
P. Hemon, M.P. Robbins and J.V. Cullimore: Targeting of glutamine synthetase to the mitochondria of transgenic tobacco 895
K. Yamaguchi-Shinozaki, M. Mino, J. Mundy and Nam-Hai Chua: Analysis of an ABA-responsive rice gene promoter in transgenic tobacco 905

D. Mascarenhas, I.J. Mettler, D.A. Pierce and H.W. Lowe: Intron-mediated enhancement of heterologous gene expression in maize 913
E. Fejes, A. Pay, I. Kanevsky, M. Szell, E. Adam, S. Kay and F. Nagy: A 268 bp upstream sequence mediates the circadian clock-regulated transcription of the wheat Cab-1 gene in transgenic plants 921

Update section

F. Takaiwa, S. Kikuchi and K. Oono: The complete nucleotide sequence of the intergenic spacer between 25S and 17S rDNAs in rice 933
G.D. Foster, B.M. Meehan and P.R. Mills: Nucleotide sequence of the 7K gene of carnation latent virus 937
M. Ohme-Takagi and H. Shinshi: Structure and expression of a tobacco β-1,3-glucanase gene 941
J.C. Gray, S.M. Hird and T.A. Dyer: Nucleotide sequence of a wheat chloroplast gene encoding the proteolytic subunit of an ATP-dependent protease 947
C.L. Nessler, W.G.W. Kurz and L.E. Pelcher: Isolation and analysis of the major latex protein genes of opium poppy 951

Erratum

P.A. Okubara, S. Flores and E.M. Tobin: Characterization of a negatively light-regulated mRNA from *Lemna gibba* 955

Full paper

P.J. Hussey, N. Haas, J. Hunsperger, J. Larkin, D.P. Snustad and C.D. Silflow: The β-tubulin gene family in *Zea mays*: two differentially expressed β-tubulin genes 957